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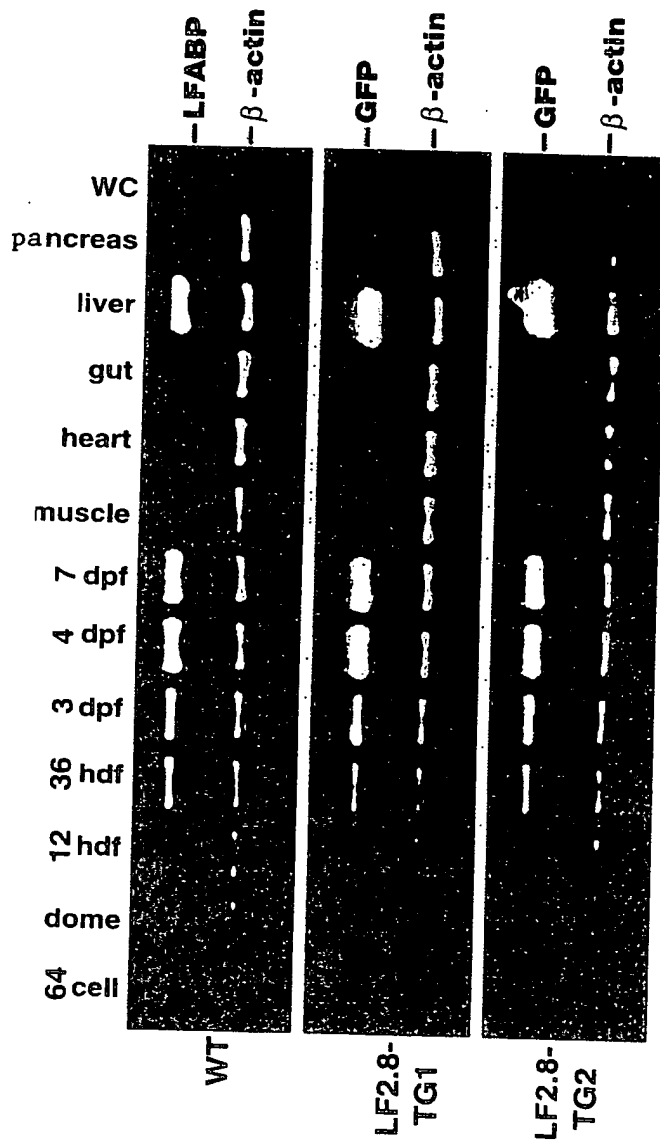


Figure 1

Inventor: Jen-Leih WU et al.  
 Title Transgenic Fish Germline Expression Drive by Liver Fatty  
 Acid Binding Protein (L-FABP) Gene Promoter and  
 Applications Thereof  
 Attorney Docket No.: 33151-188802

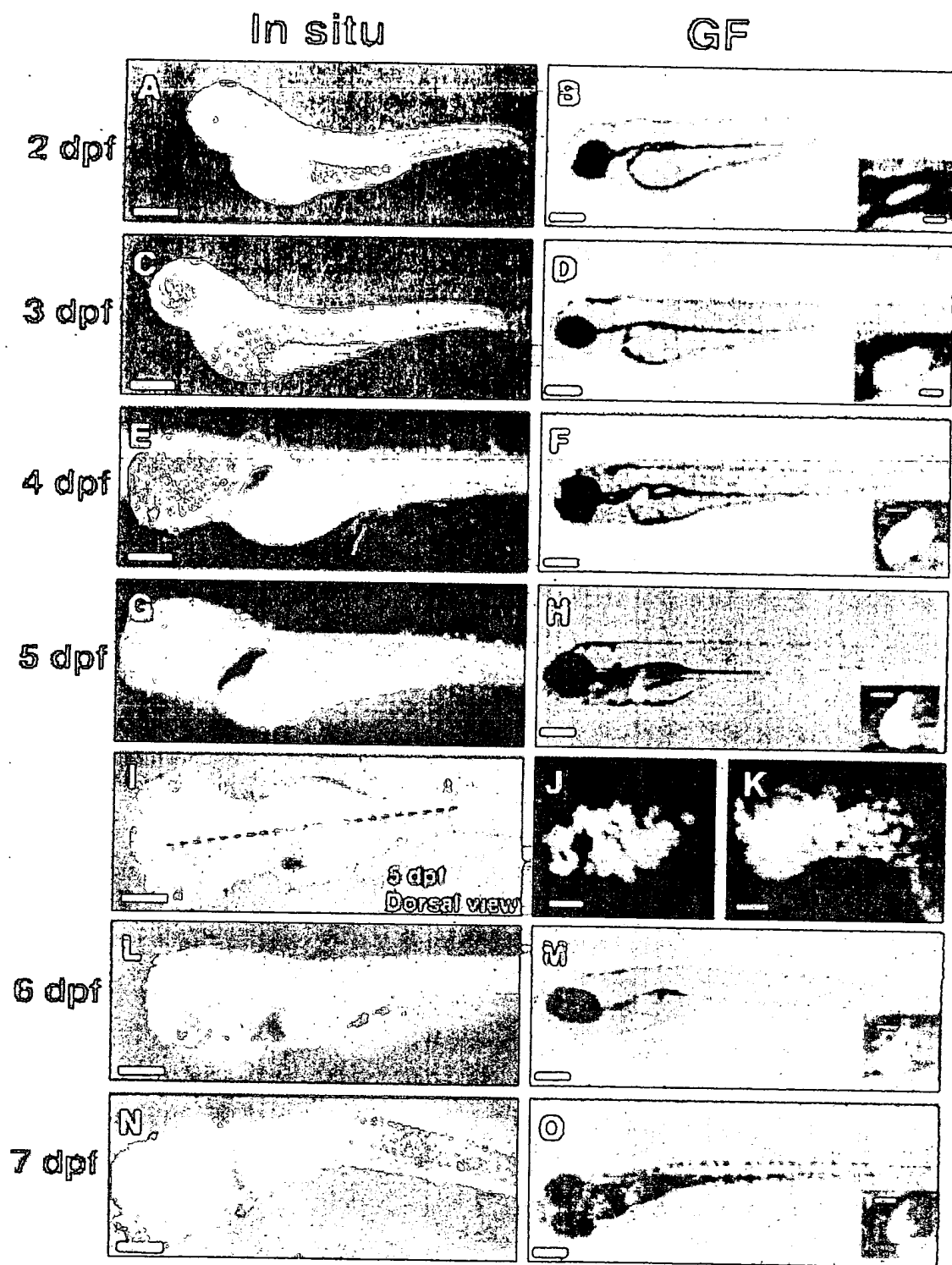


Figure 2

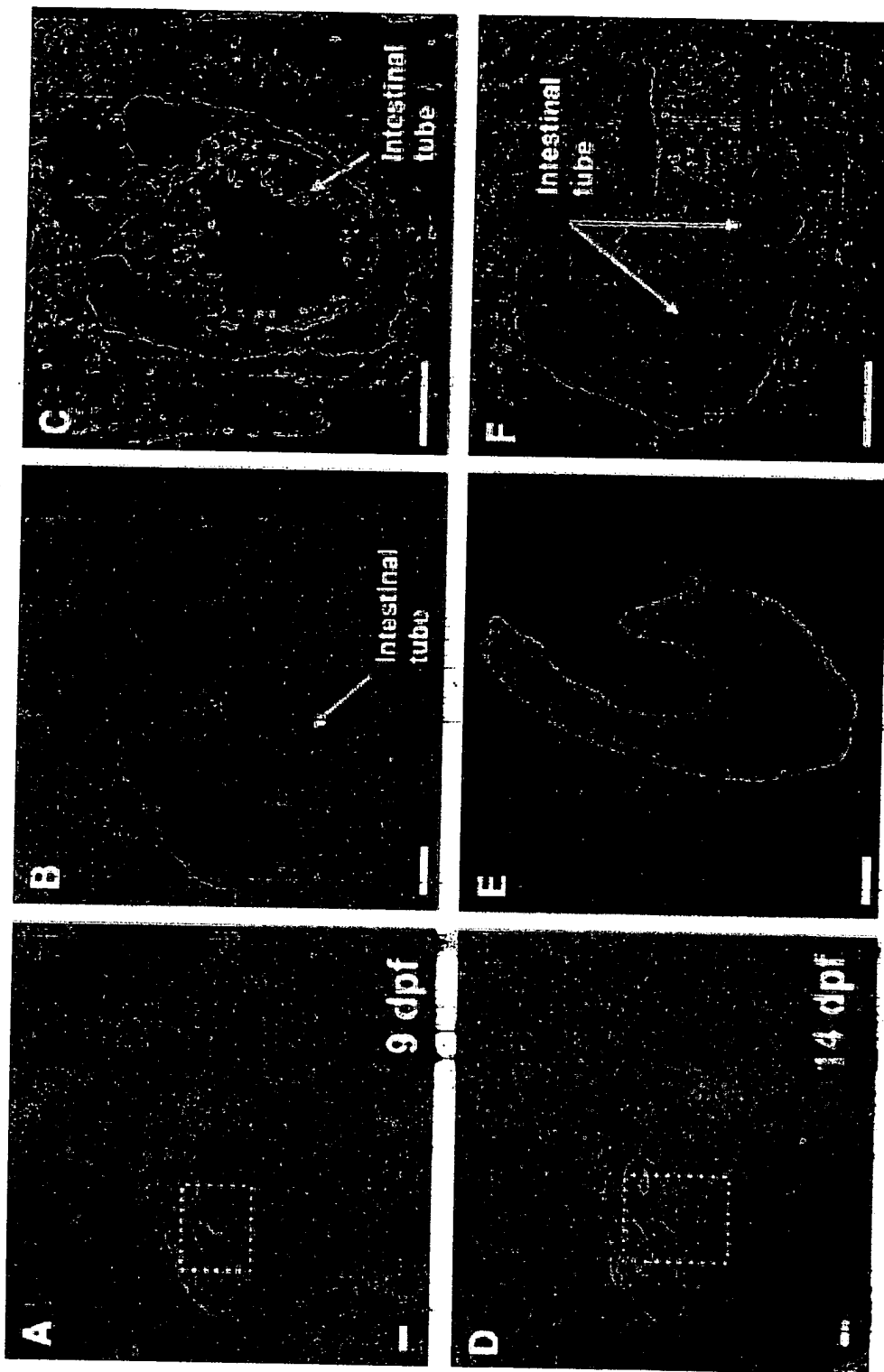


Figure 3

Inventor: Jen-Leih WU et al.  
 Title Transgenic Fish Germline Expression Drive by Liver Fatty  
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 Attorney Docket No.: 33151-188802

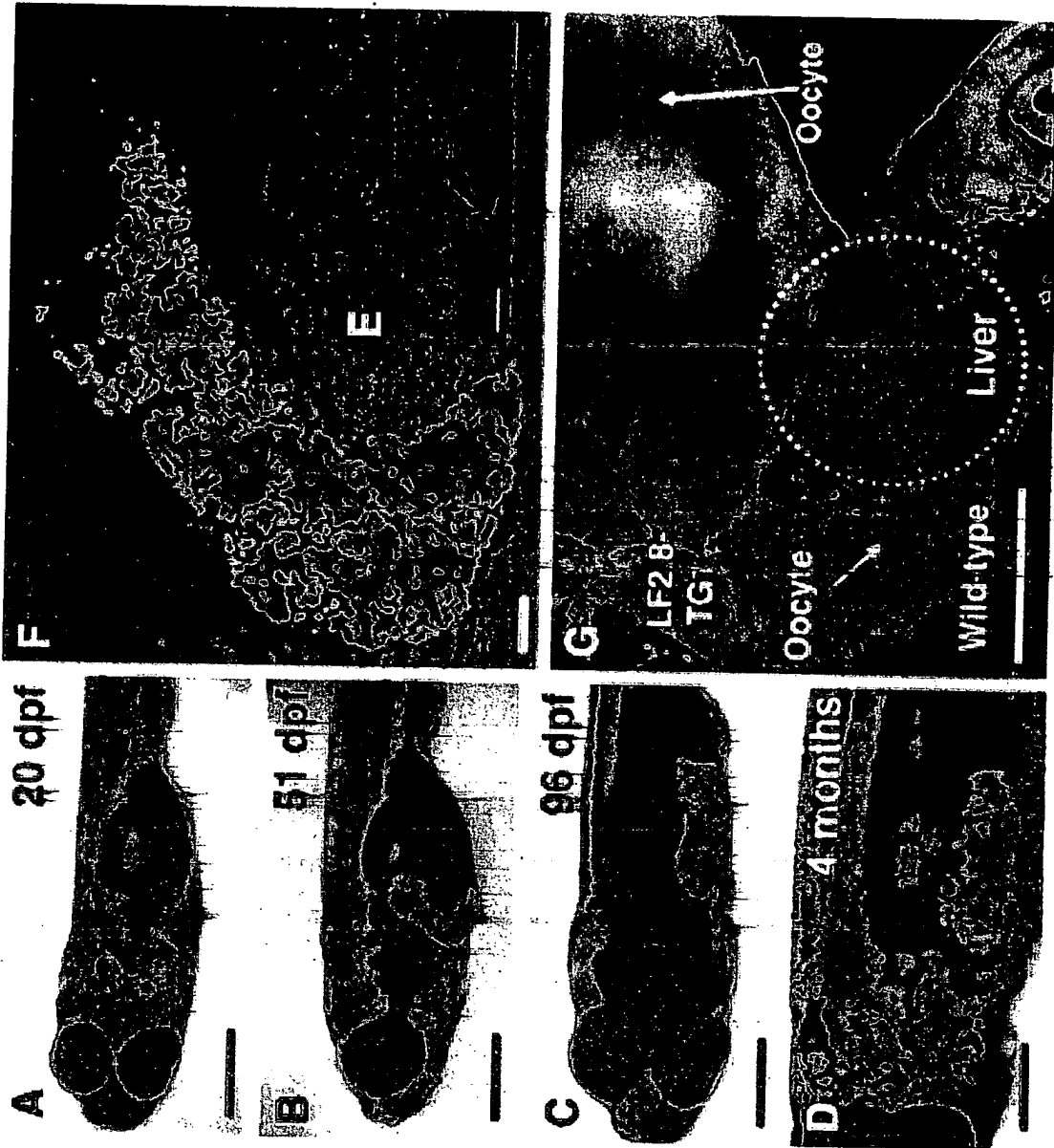


Figure 4

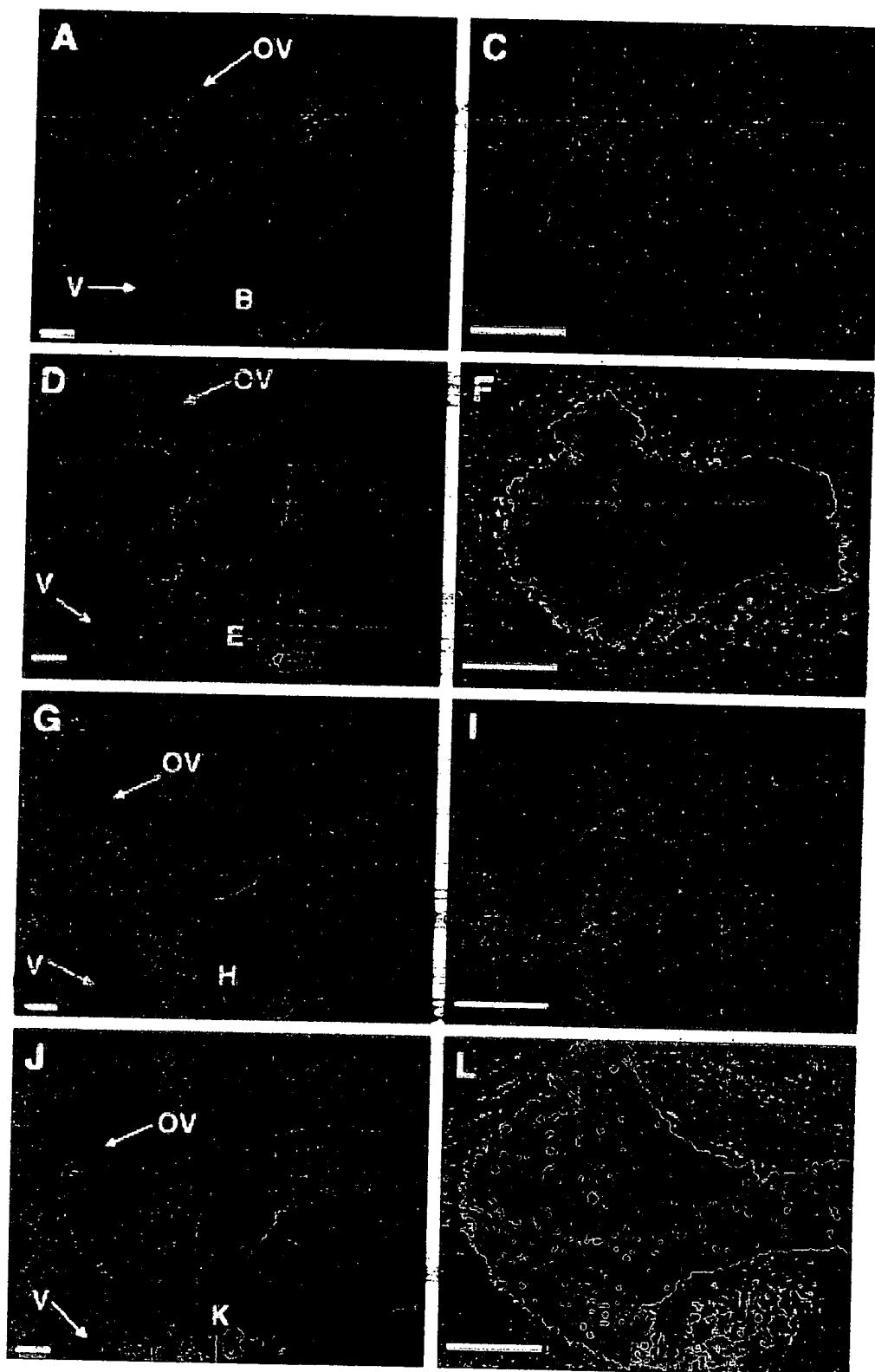


Figure 5

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Inventor: Jen-Leih WU et al.  
 Title Transgenic Fish Germline Expression Drive by Liver Fatty  
 Acid Binding Protein (L-FABP) Gene Promoter and  
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 Attorney Docket No.: 33151-188802

gcagtaaatt	gattcaaact	gaaatcactg	caaaatgatt	ctaatagtaa	atgcaaattc	60
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aaactcctgg	aaaaaccgtc					2960

(SEQ ID NO: 2)

Figure 6

-863 TTAATTTTAA ATTTAAATTC CTTTAAATTT TTTTATTTTT TTTATTTTAT TTTATTTTAC AGTCGACAA ATACTGAACT  
-783 AAAAACCTCT CAGATCATGT CTATGCCATTT CATTTTATTT TATTTTCATTT TATATTATTA ATTTAAATAT TTTTATTTTA  
-703 CAGTCTGACA AATACTGAAT TAAAAACCAT CAGATCATGT CTCATGCAAT TAACTTAACT TTATTTAATT CAATTAAAT  
-623 GTTTGTTTGT TTGTTTCCCT GCAATTTGTTT GTTGTGTTT TACAATCTGA CATACTGGAC CGAAAAAACT CAGATCATGT  
-543 CTTATGCATT TTACTTTTAT TTATTTTGA TTAGAAAGAT CAAGGGAACA ACTTTTAAA TATTAATTTCT GTATCAAAAT  
-463 CTCCTTTTGA ACATTTAATTT GATTTAAAA ACCACTTCAC CCAAGAAACA TTTCTCTACA GTCGAATGGT TGTAAACTTT  
-383 TATGAATTAC TTTCACAGAA AAAGATTTT GGAAGAATAT TCGAAAAAA CCRGCTTTG ACTTCCATAG TAACAACAAA  
-303 AAATACTATG GAAGTCAATG CCTGTTTTTT CCRNTTGG TAICTTCAAT CTGGAGCAGA ATTTTTCGG TGACGAGTCT  
-223 TTATTTTGG TCTGCTACTG CTGCTGTGT GAGGCAATTT TGATCTGTCC CTTTAAGTCG TCAAAATCCG GTGCAATATT  
-143 CCACATGCAC ACCTCATCTT CTGCTGGAGT TGATGAACCG TGGCTTGTTC AACACGCAGC AGCTCATTTGA CTGAACCTCT  
-63 CTCGATTTTAA TTTCTGTCAGA TCTGAAGCTG ACCTTCACTT TGCTGTCAGC TTCTCCAGAA AGCTTGGCCT TCAGCGGGAC  
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+178 ACCAACTCCT TCACCATCGG CAAGAGCCT GAAATCACCA CCAATG

Figure 7 (SEQ ID NO: 27)

Inventor: Jen-Leih WU et al.  
Title Transgenic Fish Germ-line Expression Drive by Liver Fatty  
Acid Binding Protein (L-FABP) Gene Promoter and  
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Attorney Docket No.: 33151-188802



**A**

LFABP upstream region



GFP Intensity

Liver Others

LF2.8	+++	+
LF2.5	+++	-
LF2.0	+++	-
LF1.8	+++	++
LF1.5	-	++
LF1.2	-	++
LF1.0	-	+
LF0.8	-	-
LF0.5	-	-

**B**

LF2.8-EGFP

**C**

LF2.5-EGFP

**D**

LF2.0-EGFP

**E**

LF1.8-EGFP

**F**

LF1.2-EGFP

**G**

LF0.8-EGFP

Figure 8

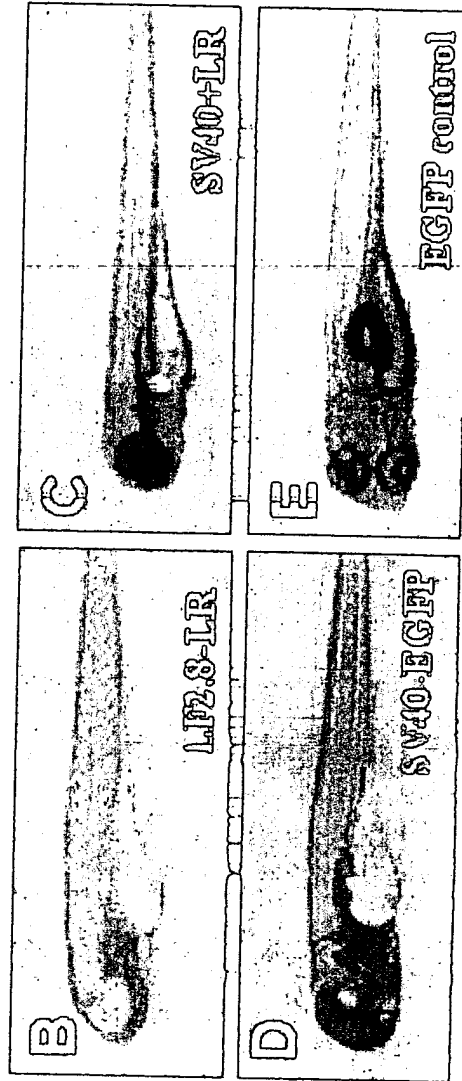
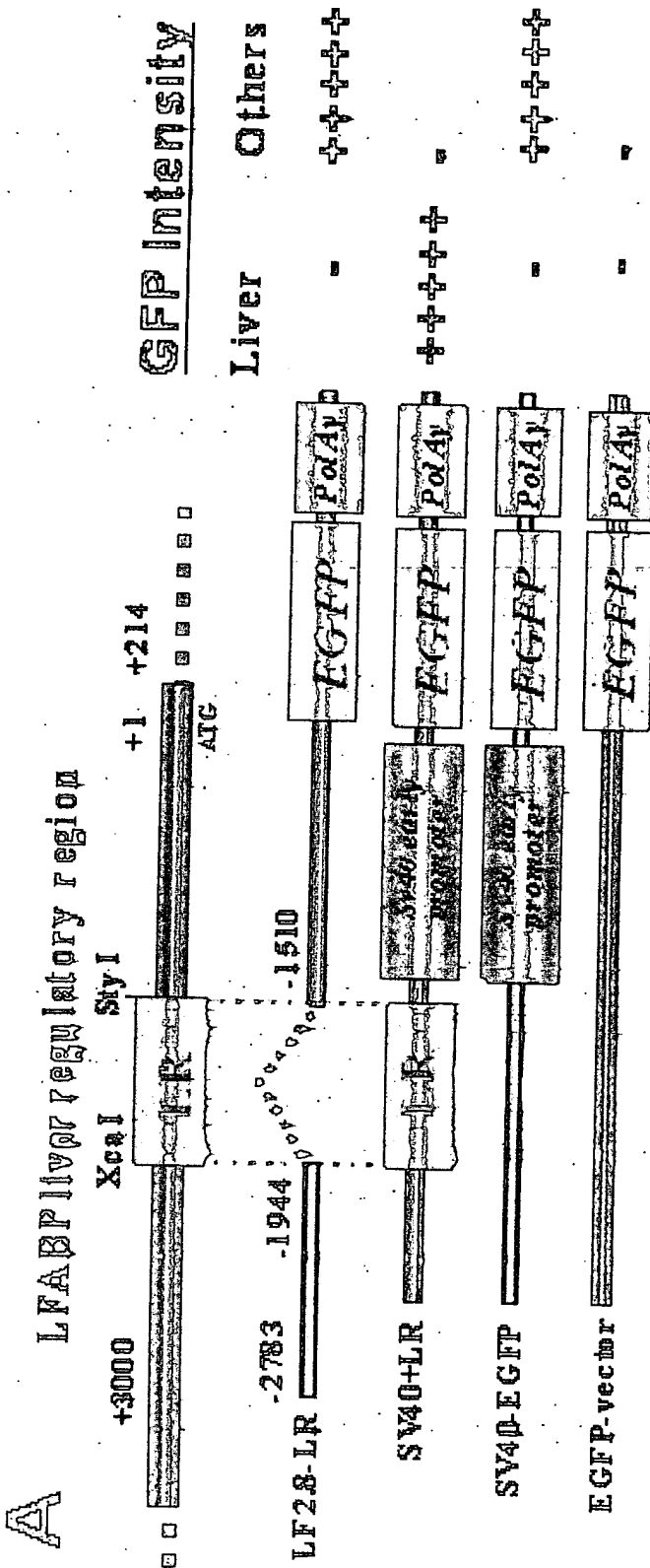


Figure 9

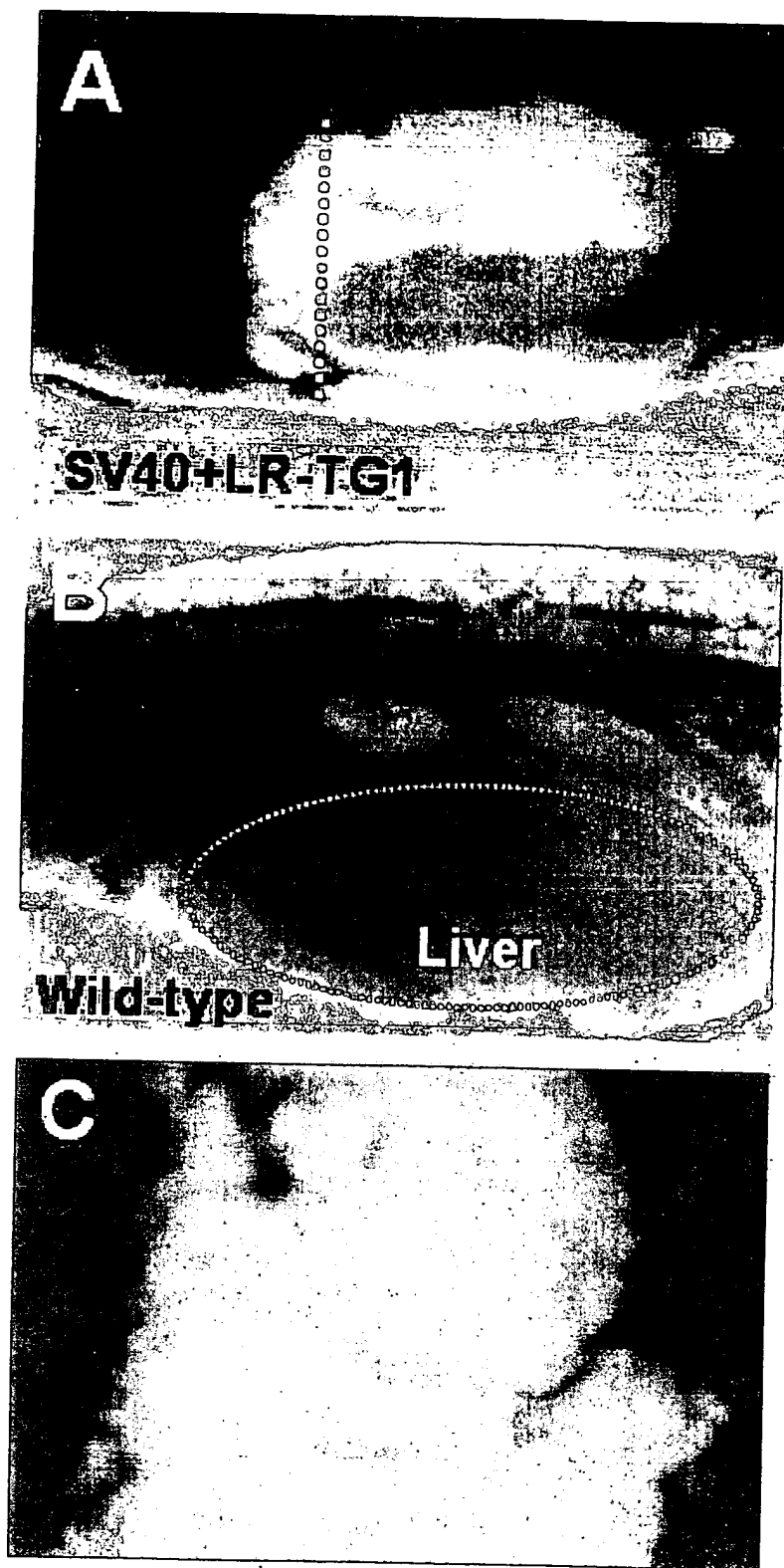


Figure 10

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Inventor: Jen-Leih WU et al.  
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## Liver regulatory element

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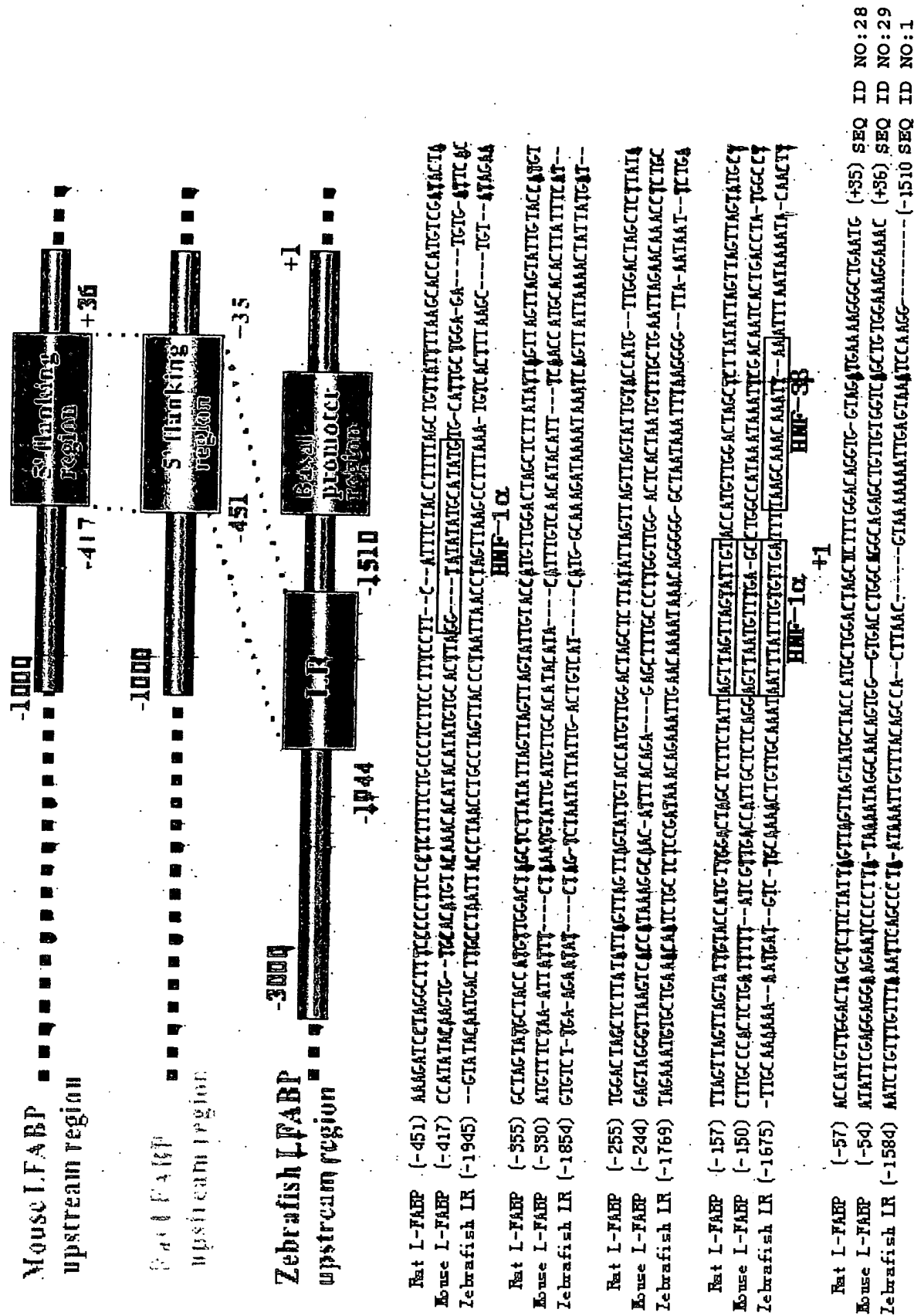
-1983 AAGCTATTTT TTTTCGATAG TCTACAGAAC AAACCATCGG TATACAAATGA CTTGGCCCTTATTCCTTATCC TGCCTAGTTA
-1903 CCCTTTTAAA CCTTGTAAAG CCTTTAAATG TCACITTTAAG CTGTATAGAA GTGTCITTGAA GAATATCTAG TCTAATATTA
      PDX1/ISL1(2)
-1823 TTGACTGTCA TCATGGCAAA GATAAAATAA ATCAGTTATT AAAACTATTA TGATTAGAAA TGTGCTGAAA CAATCTGCTC
      PDX1/ISL1(1)
      -1944
      HFH(1)
      HFH(2)
-1663 TGATGTCTGC AAAACTGTTG CAAATATTTTAAATTTGTTG ATTTTATGCTTAAAT AATTCTGATT GCAAAAAAAA
      HNF1-α
-1583 ATCTGTTTGT TTAAATTCAG CCCTAATAAA TTGTTTACAG CCACITTAACG TAAAAAATT GAGTAAATCC AAGGAATCAT
      HNF3β

```

Figure 11

-1510  
(SEQ ID NO:1)

Inventor: Jen-Leih WU et al.  
 Title Transgenic Fish Germline Expression Drive by Liver Fatty  
       Acid Binding Protein (L-FABP) Gene Promoter and  
       Applications Thereof  
 Attorney Docket No.: 33151-188802



**A**

```

-1983 AAGCTATTTT TTTCGATAG TCTACAGAC AAACCATCGG TATACAAATGA CTTCGGTAAI TRCCCTARCC TGCCTGCTT
-1903 GCGCTATTTT GCGCTTAAAG CTTTAAATG TCAATTTAAAG CTGTATAGAA GTGCTTGGAA GAATATCTAG TCTAATATTA
      PDX1/ISL1(2)
-1823 TTGACGCTCA TGTATGGCAA GATAAATAA ATCAGTTATT AAACTATTA TGCTGAGAA CAGTGTCTC
-1743 TCCGATTTTC AGGATATGA CAAATTTTTC AGGCTGCTA ATAAATTA GGGCTTAAAT AATTCGTATT GCAGAAAAAA
      HNF(1)
-1663 TGAATGCTGC AAAATGTTG CAAATTTT ATTTGTTTG ATTTTAAAGCA ACCCTTTTAA ATTTAATAA ATACAACTTA
      HNF(2)
-1583 ATCTGTTTGT TTAATTTTCA CCTAATAA TTGTTTACAG CCACTTAACG TAAAAAAT GAGTAAATCC AAGGAATCAT
      HNF-1α
      HNF-3β
  
```

**B**



	SV40-PDX1(1)	SV40-PDX1(2)	SV40-HFH(1)	SV40-HFH(2)	SV40-HNF-1α	SV40-HNF-3β	SV40-A	SV40-B
<b>GFP Intensity</b>	++	++	++	++	++	++	++	++
<b>Liver</b>	++	++	++	++	++	++	++	++
<b>Others</b>	+	+	+	+	+	+	+	+

○: PDX1 ○: HNF-1α ●: HNF-3β X: mutation

Figure 13

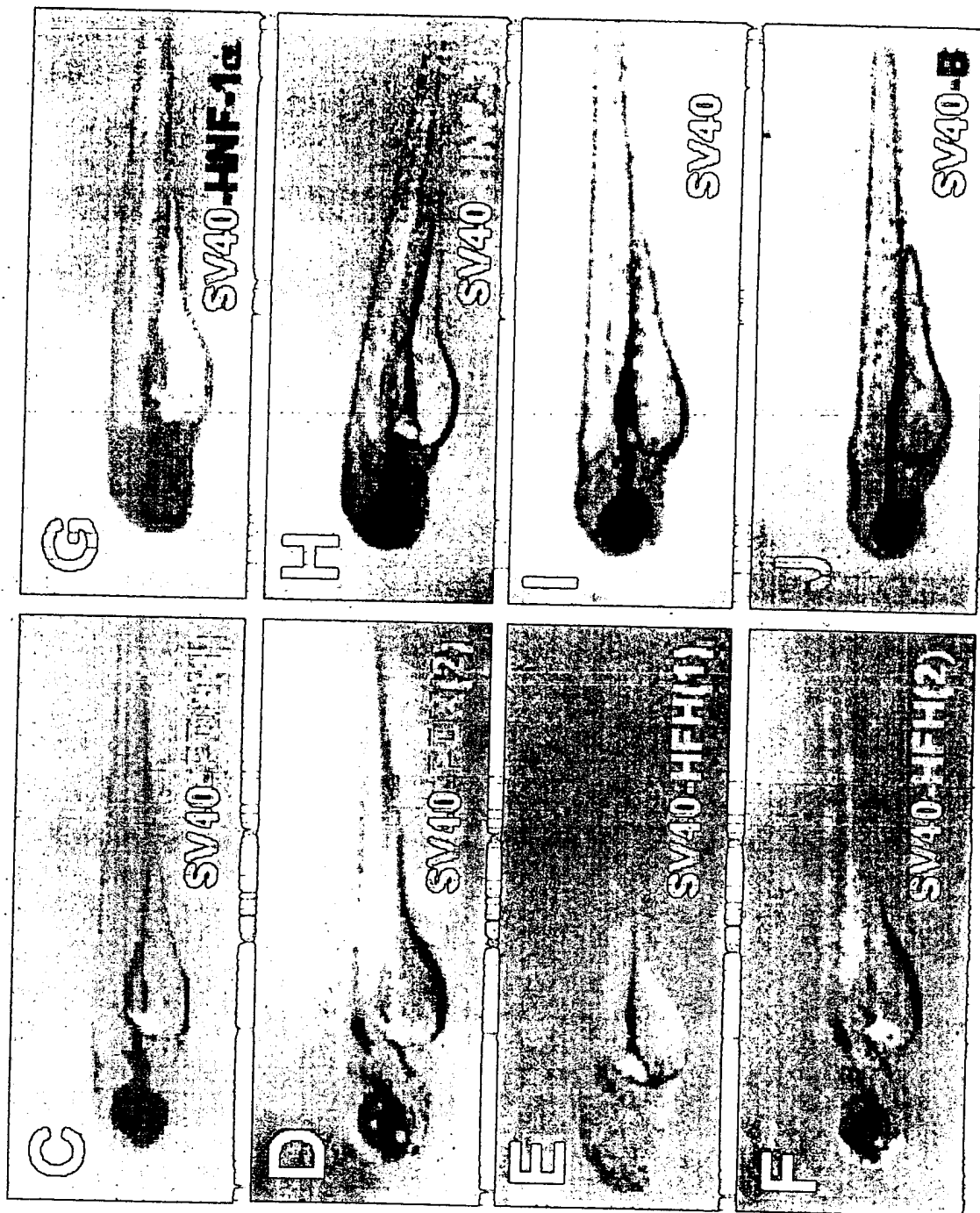


Figure 13 (continued)

Inventor: Jen-Leih WU et al.  
 Title Transgenic Fish Germline Expression Drive by Liver Fatty  
 Acid Binding Protein (L-FABP) Gene Promoter and  
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 Attorney Docket No.: 33151-188802